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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/017,213

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Scott R. Smith

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FISH & RICHARDSON P.C.  
PO BOX 1022  
MINNEAPOLIS, MN 55440-1022

EXAMINER
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MEHTA, PARIKHA SOLANKI

ART UNIT	PAPER NUMBER
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3737

MAIL DATE	DELIVERY MODE
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07/03/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	Application No. 10/017,213	Applicant(s) SMITH, SCOTT R.	
	Examiner Parikha S. Mehta	Art Unit 3737	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 17 April 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-7, 9-18, 20-24, 26-45, 47-60, 62-69 and 71-85 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-7, 9-18, 20-24, 26-45, 47-60, 62-69 and 71-85 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948)                        | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Response to Arguments*

1. Applicant's arguments, see *Pre-Brief Conference Request*, filed 17 April 2006, with respect to the rejection(s) of claim(s) 1-7, 9-18, 20-24, 26-45, 47-60, 62-69 and 71-85 under 35 U.S.C. 103 have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Ocali et al (US Patent No. 5,928,145) and Halperin et al (US Patent N. 6,701,176), both previously made of record.

### *Claim Rejections - 35 USC § 112*

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claim 10 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 10, which depends from claim 1, recites "the internal antenna". Examiner is unable to discern from the recitations of claims 1 and 10 whether Applicant is referring to the first or second internal antenna. For the purposes of examination, Examiner will assume that the internal antenna recited in claim 10 may be either of the first or second antenna recited in claim 1.

### *Claim Rejections - 35 USC § 103*

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-7, 9-18, 20-24, 26-45, 47-60, 62-69 and 71-85 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ocali et al (US Patent No. 5,928,145) in view of Halperin et al (US Patent No. 6,701,176), previously made of record, hereinafter Ocali ('156) and Halperin ('176), respectively.

**Regarding claims 1-5, 30-33 and 60,** Ocali ('145) teaches a system and method including means and steps for obtaining an intravascular image by receiving magnetic resonance signals from first and second internal antennae positioned within a vessel near an occluded site, wherein one of the antennae is a loopless antenna, which constitutes an open wire length antenna as claimed in the instant application (Abstract, col. 17 lines 54-59). Ocali ('145) teaches guiding an ablation catheter based on the image and subsequently treating the occluded site by ablation (Abstract).

Ocali ('145) lacks steps for creating an initial map of the occluded vessel via an external MR receiver. In the same problem solving area, Halperin ('176) teaches that image data from internal and external receivers can be combined to produce a more comprehensive image (Figs. 1 & 2, col. 5 lines 43-60). Halperin ('176) also teaches that this technique tracks both the position and orientation of the tip of the ablation catheter (col. 11 lines 36-50). It would have been obvious to one of ordinary skill in the art at the time of invention to modify the method of Ocali ('145) to further employ the surface coil of Halperin ('176), and to combine the internal and external receiver data accordingly, in view of the teachings of Halperin ('176).

**Regarding claims 6 and 7,** a state of the art ablation device as taught by Ocali ('145) is known to comprise an uninsulated distal tip conductor to which RF energy is applied, and it is further known that the tip of the ablation device must be positioned proximate the vessel occlusion in order to effectively treat the occlusion.

**Regarding claims 9-12, 34-37, and 62-65,** Ocali ('145) teaches that the antennae receive MR signals, and that they may be integral with a guidewire deployed in the vessel to assist in the delivery of the recanalization device (col. 4 lines 4-9). Ocali ('145) additionally teaches that it is known in the art to integrate antennae with a catheter (col. 6 lines 53-55). Halperin ('176) further teaches that the antennae may be integral with the ablation tip (Abstract, col. 4 lines 20-22, Fig. 2).

**Regarding claims 13-16, 32, 38-43, 50, 66-68 and 81-85,** Halperin ('176) teaches calculating the position of the recanalization device and generating an integrated three-dimensional integrated image based upon a scout (map) image and image data from the internal antennae, wherein the image shows both the device and the vessel (col. 9 lines 32-53, col. 11 lines 35-36 and 59-63, Fig. 7).

**Regarding claims 17 and 44,** Halperin ('176) teaches that the MR/RF signals are representative of the atomic particles in the vicinity approximate to the antenna (col. 7 lines 36-46, col. 11 lines 29-34).

**Regarding claims 18, 20-24, 45, 47-49, 51, 52, 69, 71-76 and 80,** Ocali ('145) teaches that the first and second antennae are elongated electrical conductors which are electrically insulated from each

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other and have spaced-apart distal ends as claimed in the instant application (col. 9 line 65-col. 10 line 21, col. 17 lines 59-67)

**Regarding claims 26-29, 53-57, 78 and 79,** Halperin ('176) teaches that the antenna may be integral with the ablation tip as previously discussed (col. 4 lines 20-22). It is known that a state of the art vascular ablation procedure necessarily includes the steps of disposing the ablation tip near the site of occlusion and subsequently applying electrical ablation current to the conductor such that the tip vaporizes the substance forming the vascular occlusion. It is further known that a state of the art ablation system must include a power supply in order to be operable. Halperin ('176) further teaches selectably switching the conductor between the imaging system and the ablation power supply (col. 7 lines 23-35).

**Regarding claims 58 and 59,** Ocali ('145) teaches that the ablation and imaging steps may be performed substantially simultaneously (Abstract). The method of Ocali ('145) must necessarily require imaging the lesion prior to the ablation step, as one of reasonable skill in the art would find it obvious that ablating without first confirming the location of the lesion would be ineffective and would also be dangerous for the patient.

### *Conclusion*

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Serfaty et al (Toward MRI-Guided Coronary Catheterization: Visualization of Guiding Catheters, Guidewires and Anatomy in Real Time. *Journal of Magnetic Resonance Imaging* 12:pp. 590-594. 2000.) teach related methods and systems for loopless guidewire antennae as applied to recanalization procedures.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Parikha S. Mehta whose telephone number is 571.272.3248. The examiner can normally be reached on M-F, 8 - 4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian Casler can be reached on 571.272.4956. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Parikha S. Mehta

Examiner – Art Unit 3737



BRIAN L. CASLER  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 3700